BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

As rescanning documents *will not* correct images, please do not report the images to the Image Problem Mailbox.

(12) UK Patent Application (19) GB (11) 2 147 021 A

(43) Application published 1 May 1985

(21) Application No 8320775

(22) Date of filing 2 Aug 1983

(51) INT CL[4]
E04D 1/28

(52) Domestic classification
E1D 146 147 2139 401 501 502 545 LEKG
U1S 1699 E1D

(56) Documents cited
GB 0605219

(58) Field of search
E1B
E1D

(71) Applicants
David Hugh Morgan,
4 Park Place, Beaufort, Ebbw Vale, Gwent
Dennis Alan Thomas,
35 Badminton Grove, Ebbw Vale, Gwent

(72) Inventors
David Hugh Morgan,
Dennis Alan Thomas

(74) Agent and/or Address for Service
D. A. Thomas,
35 Badminton Grove, Ebbw Vale, Gwent

(54) Roofing slates

(57) A roof slate has a lip 16 set at right angles to its upper edge to allow it to be located and held in position on a roof batten. When in position the slate is fixed by nailing through the holes 12 into the roof batten. When the next course of slates are laid above, the nails will locate through the slot 13 without causing damage to the 'face' of the slate below. The 'snap-off' area 14 is provided to allow the top edge of the slate between the lip and the slot to be broken away for ease of replacement. The 'punch-out' areas 17 are provided for use during replacement to facilitate a connector to be inserted and joined to the slates at either side.

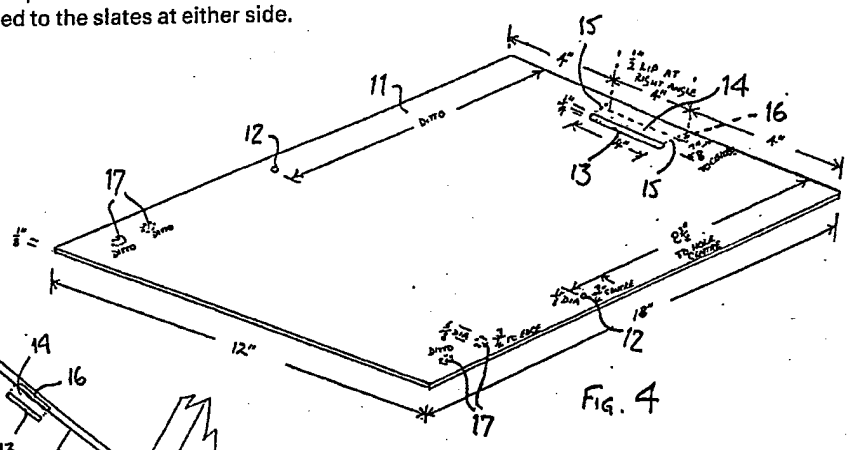


Fig. 4

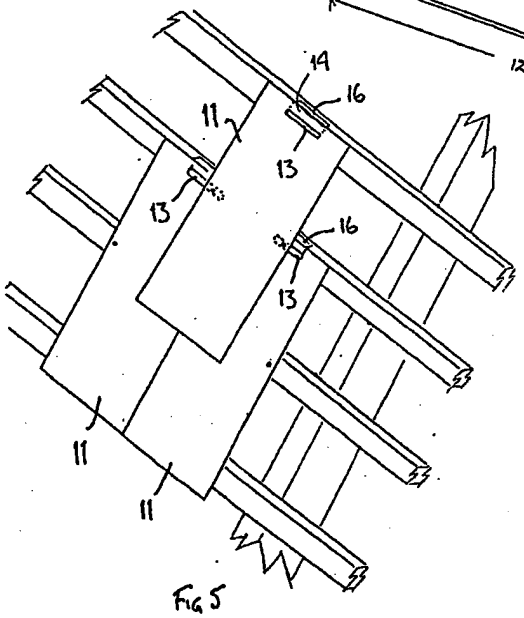


Fig 5

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1982.

GB 2 147 021 A

2147021

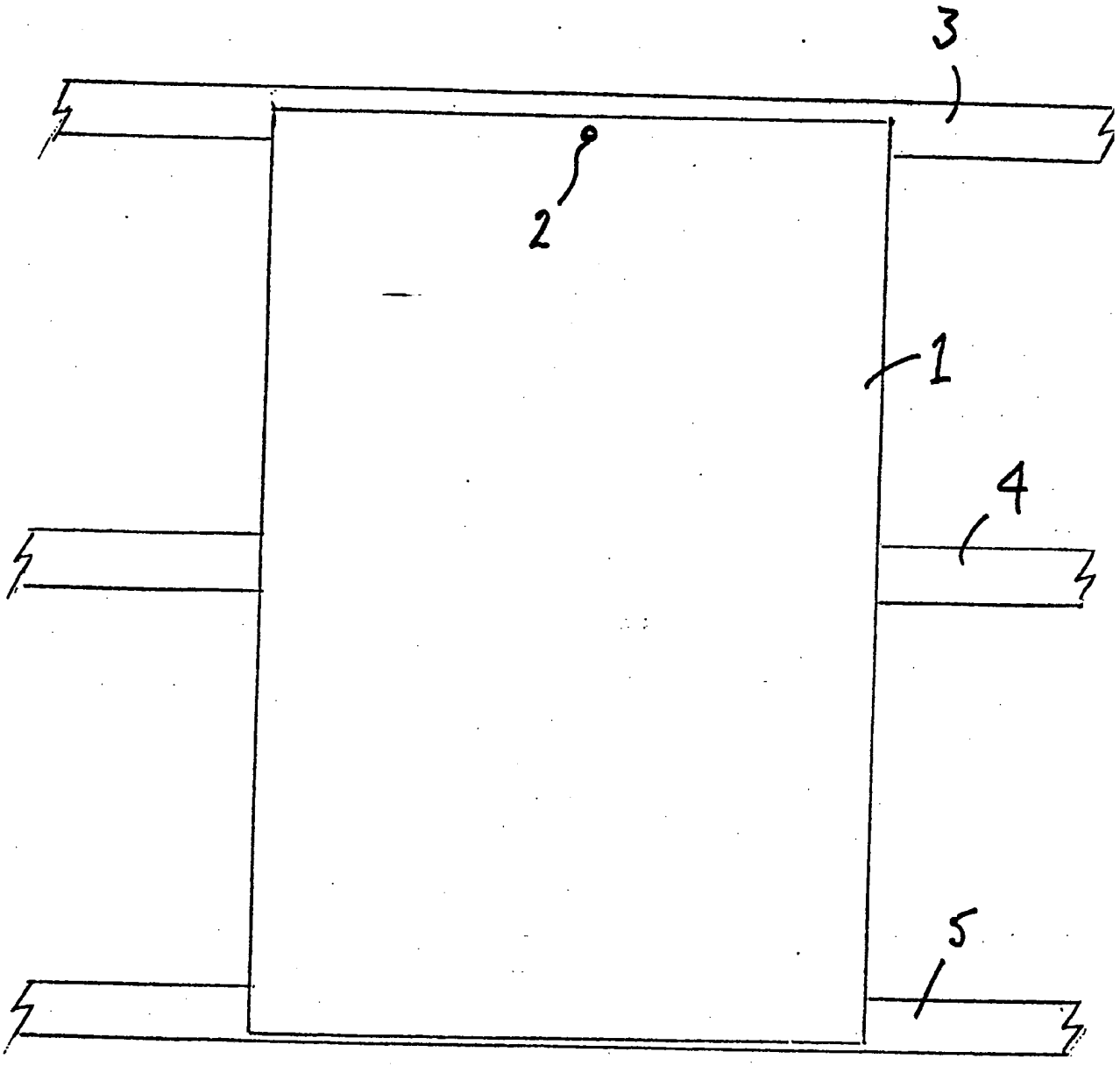


FIG. 1

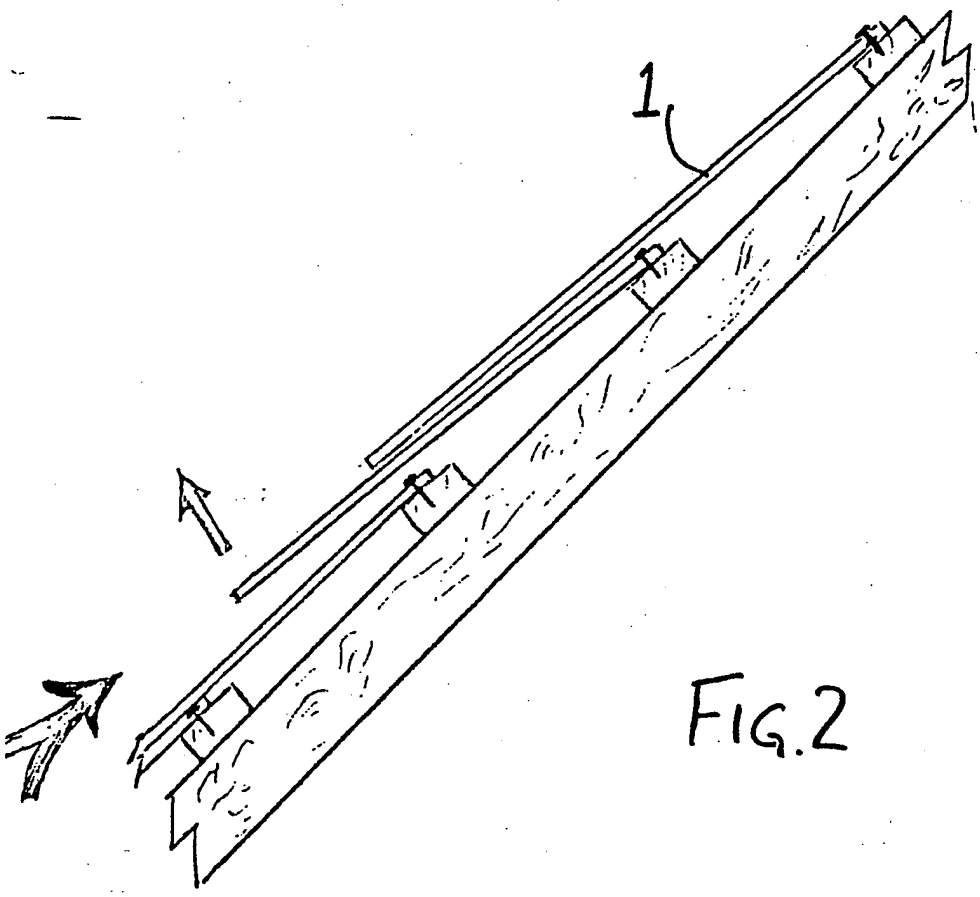


FIG.2

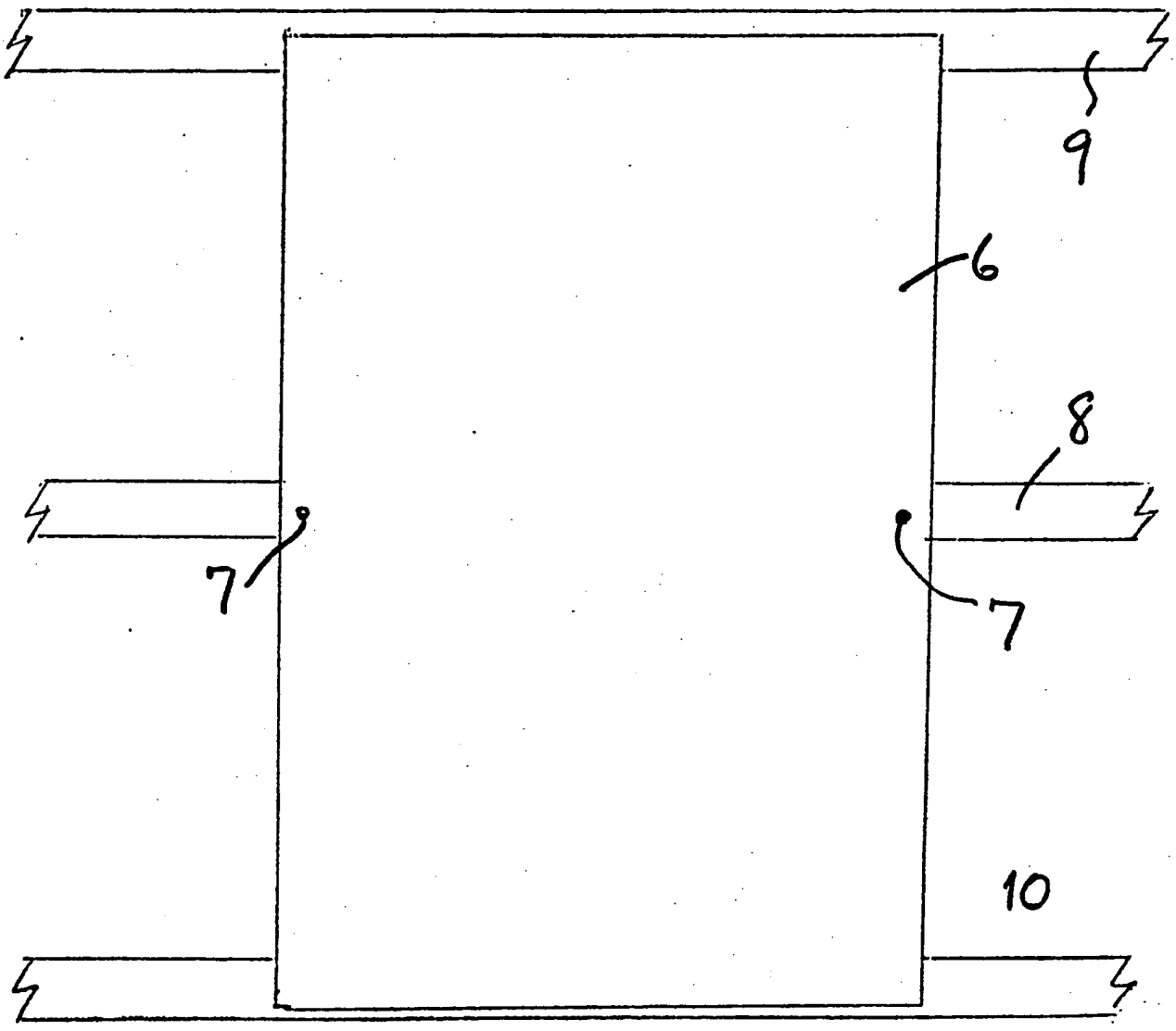


FIG. 3

2147021

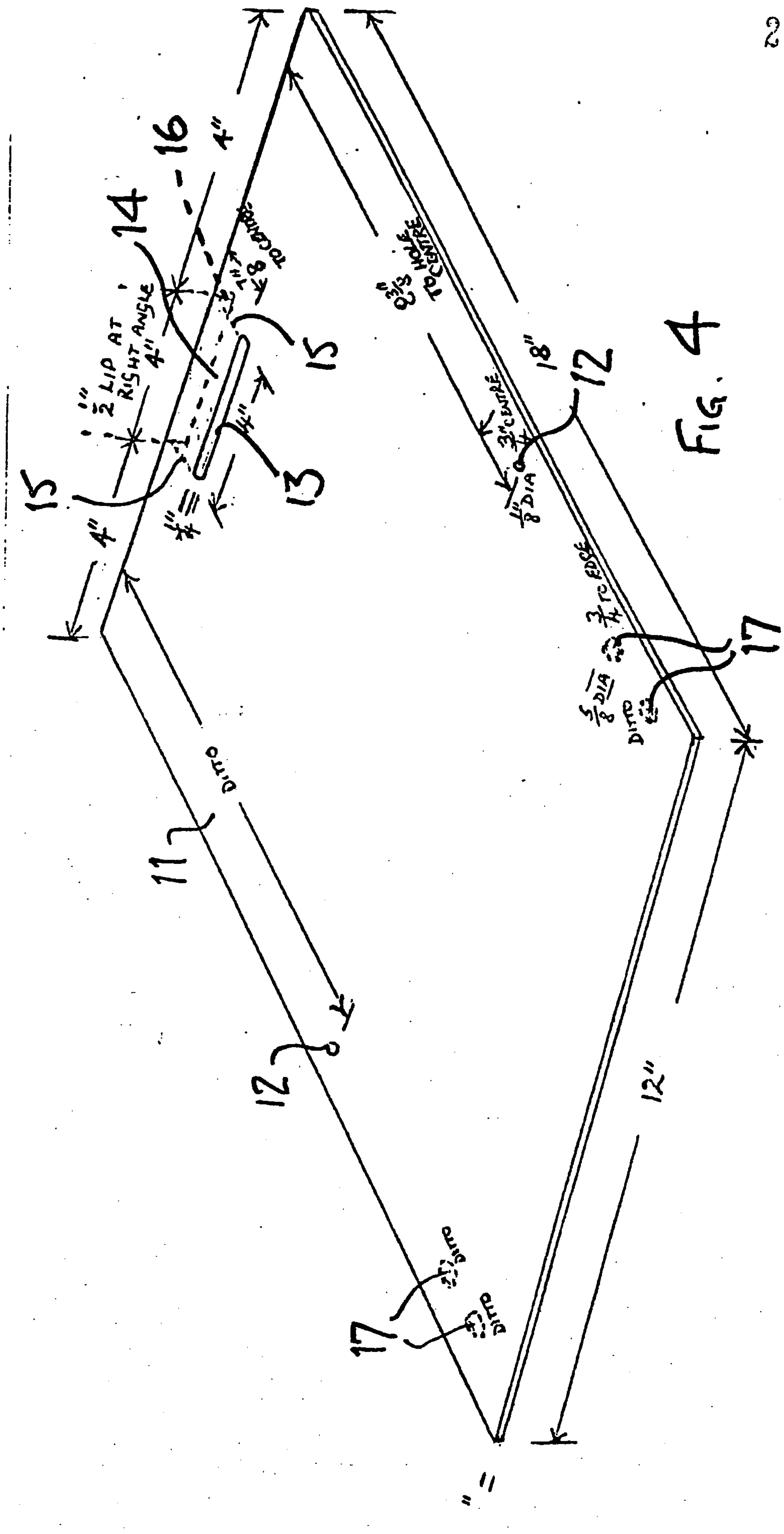


FIG. 4

2147021

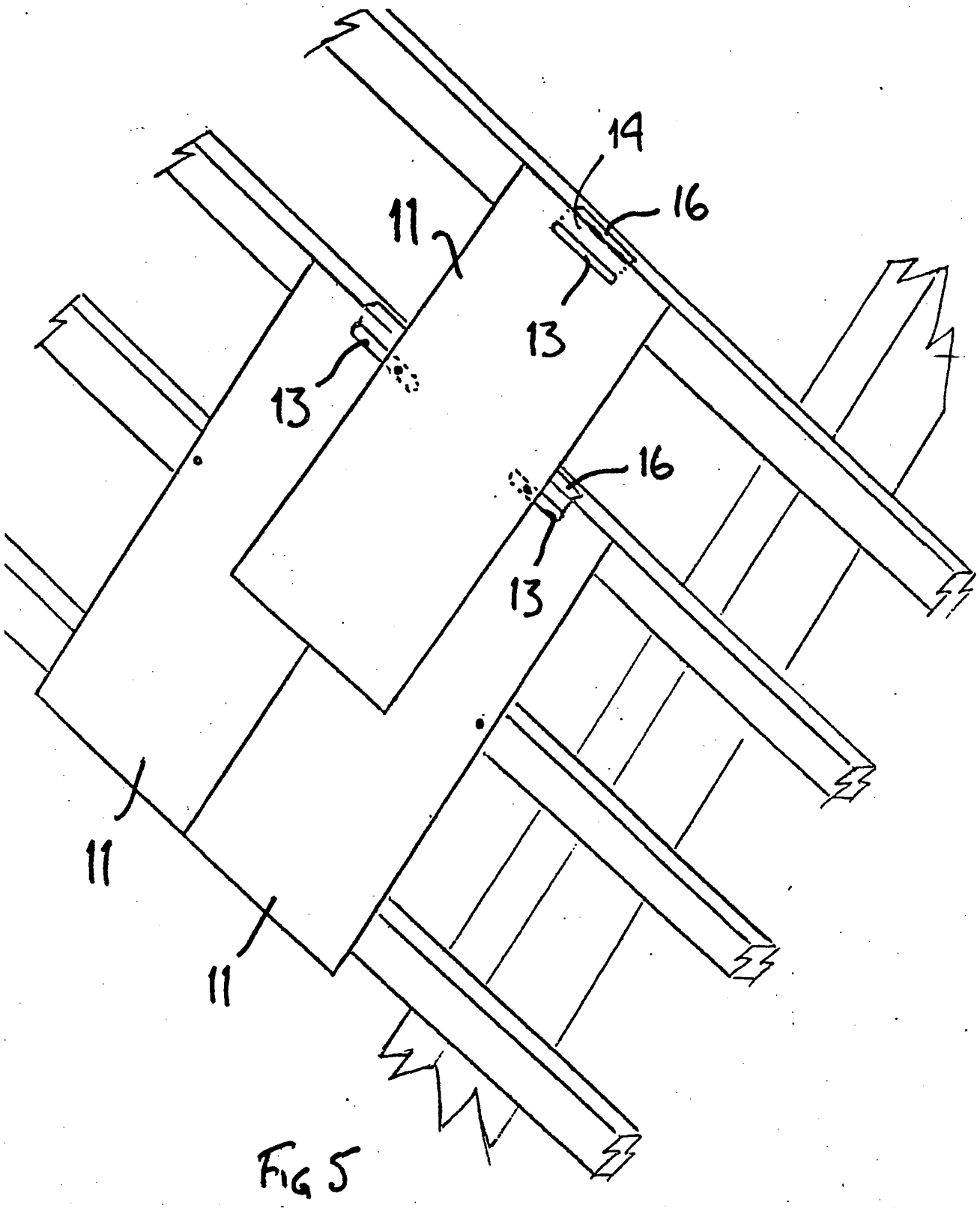


FIG 5

2147021

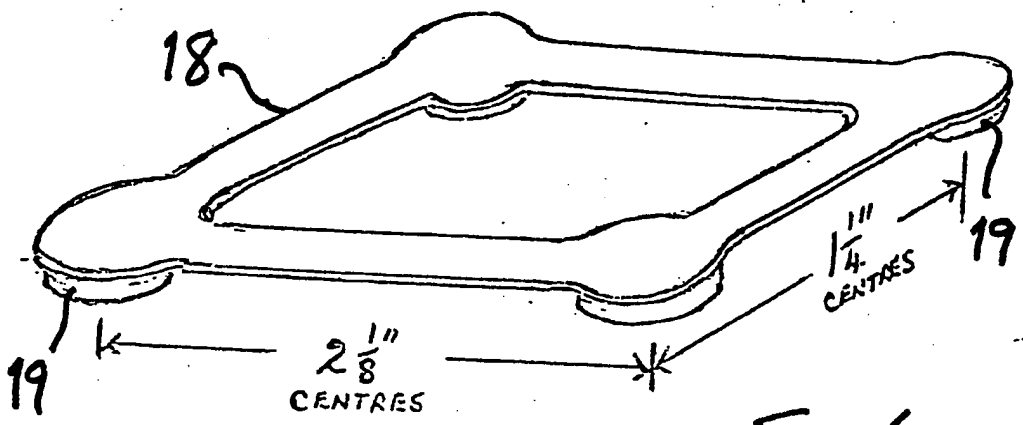
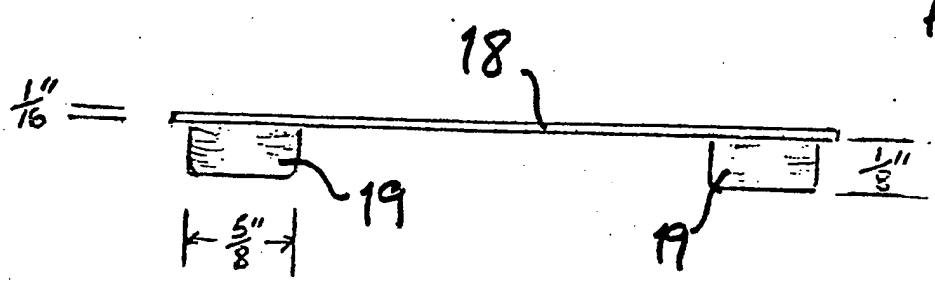


FIG. 6



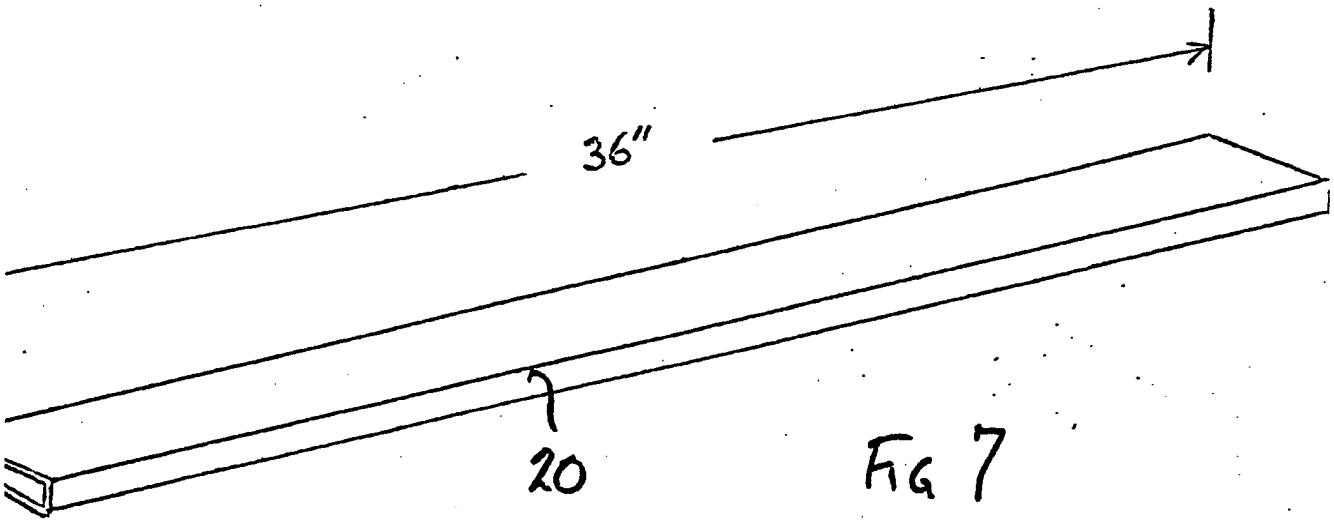
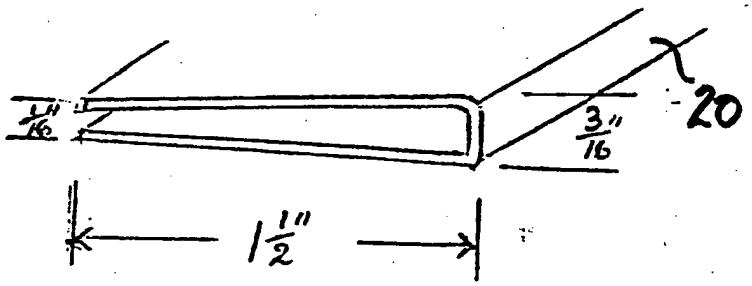


FIG 7



POOR QUALIT

2147021

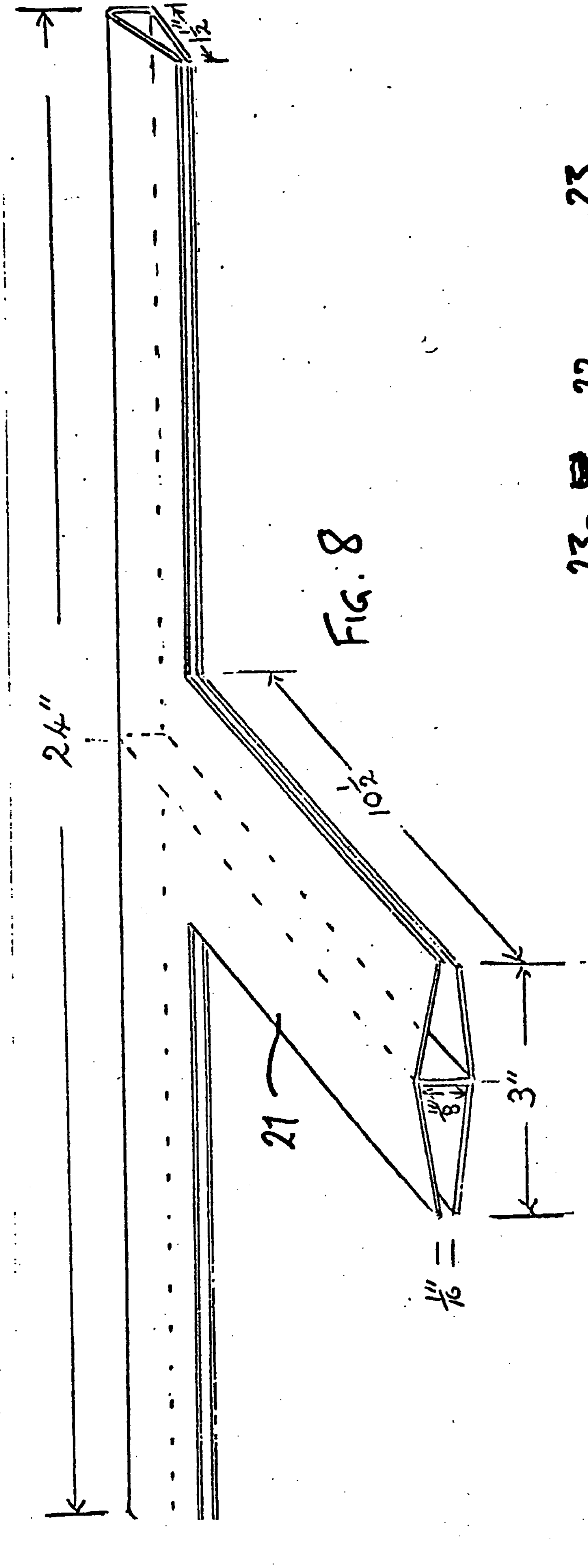


FIG. 8

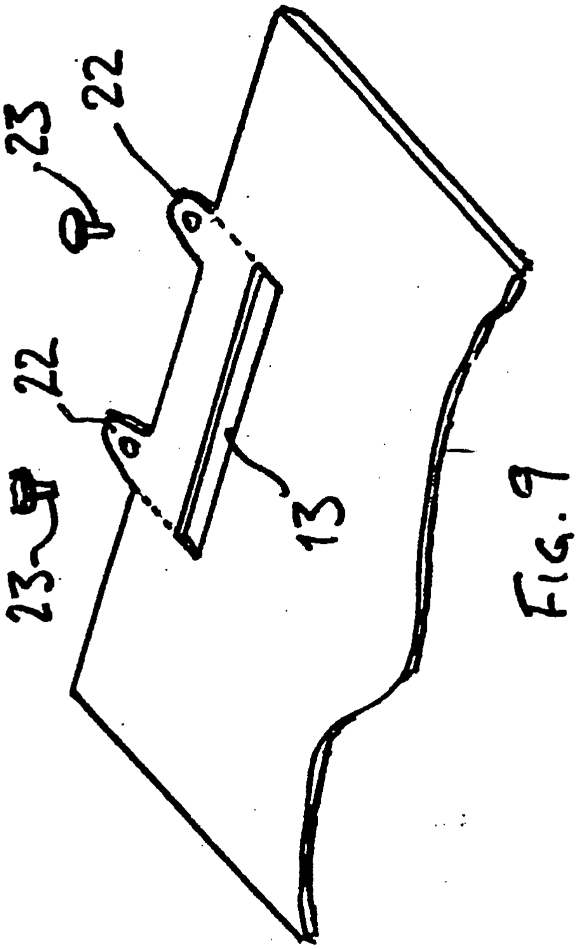
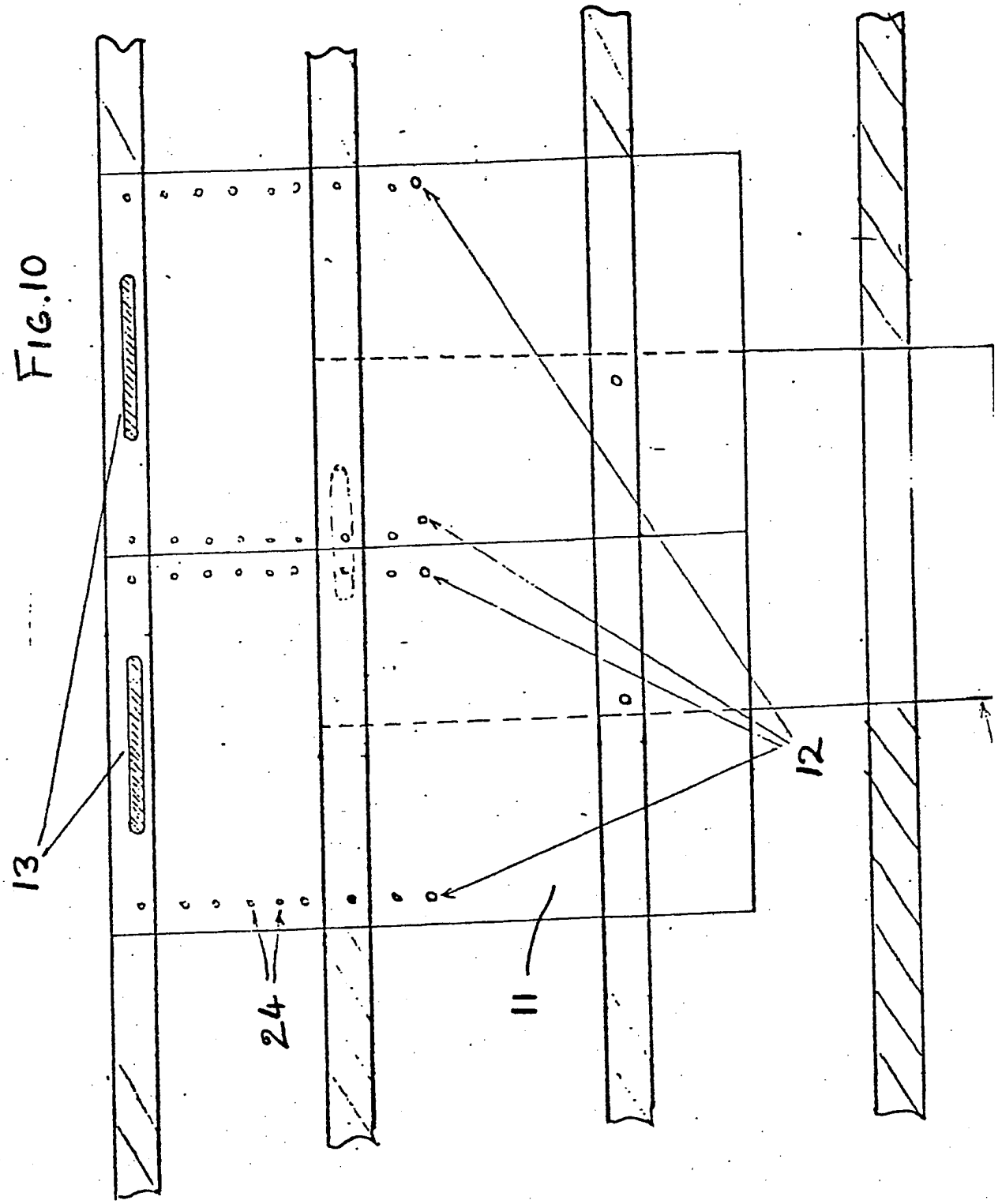


FIG. 9

FIG.10



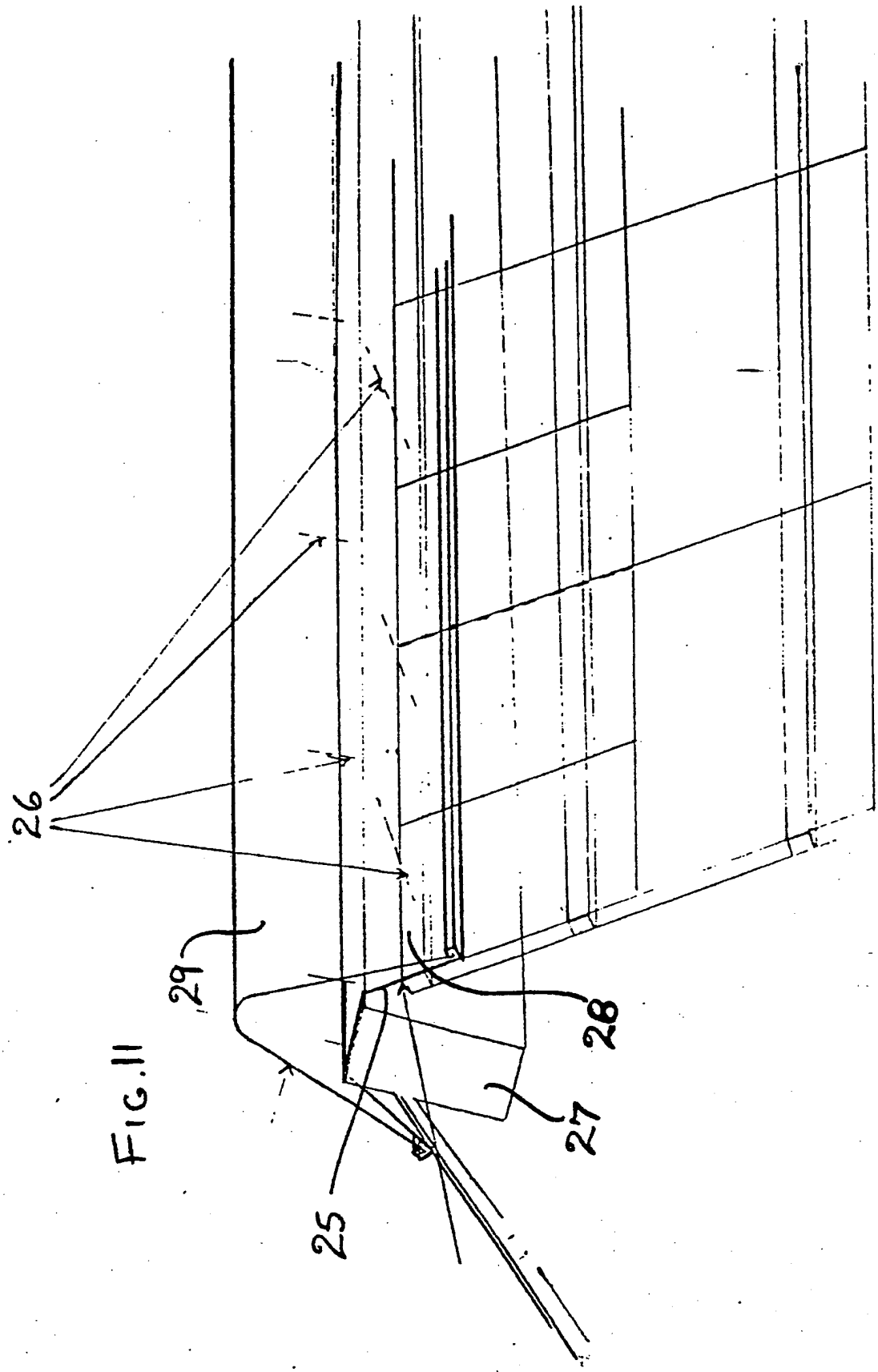


Fig. 11

SPECIFICATION

Improvements relating t roofing slates

This invention relates to roofing slates.

Traditionally, natural slates have proved admirable roofing material in many respects, but they are now very expensive, and they do have certain drawbacks. They are brittle and are therefore prone to damage, for example as the tiler works his way up the roof. Also, they need at least one hole by which to nail them to the battens, and this is not always easily made, particularly if it is left to the tiler to do so while on the roof. Also, when fixing them, they have to be held accurately in place on a slope while the tiler places the nail and drives it home. This is not easy.

When a slate has to be replaced, its removal is usually not too difficult, but the substitute slate has to be held in place by a tingle which is hooked over the top edge of the slate below. It extends down under the replacement slate and back up over its lower edge. This holds the new slate slightly proud of the old ones and can allow wind and rain penetration.

Artifical slates are known, the commonest ones being of bitumen-impregnated asbestos. However, these are prone to discolouration and warping and do not have a very long life, perhaps fifteen years average. Also, there is the same difficulty in fixing them in the first place and replacing them if damaged.

The aim is to provide an artificial slate which is easier to fix and replace than traditional ones and their current substitutes.

According to the present invention there is provided a roof slate of synthetic plastics material apertured for centre nailing, the intended upper edge having a hook formation for locating over a batten and the slate being apertured adjacent said upper edge to allow nailing through of slates in the row above.

Preferably there will be a slot extending over the centre portion of the slate near its upper edge, leaving a narrow bridging band. The hook formation may be provided on this band, which preferably will be connected at its ends to the main body of the slate by weakened portions. Thus, for reasons explained later, the band can easily be snapped off, removing the hook formation and transforming the slot into a recess open to the top edge.

This facility is used when replacing such slates. In order to secure a replacement, there will be clips to hold it to the adjacent ones in the row. These may engage over the edges of the slates, or the slates may be provided with punch-out holes near the lower corners into which stud like formations on the clips can be engaged.

For a better understanding of the invention, some embodiments will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a plan view of a traditional slate secured to a roof batten by a top hole,

Figure 2 is a vertical cross section of part of a roof showing slates of the Figure 1 type,

Figure 3 is a plan view of a traditional slate secured to a roof batten by centre holes,

Figure 4 is a perspective view of a slate according to the invention,

Figure 5 is a perspective view of several such slates secured to part of a roof,

Figure 6 shows one form of a clip for securing together a replacement slate to an adjacent existing one,

Figure 7 shows another form of clip for holding a replacement slate,

Figure 8 shows yet another form of clip for holding a replacement slate, and

Figure 9 shows an alternative upper edge formation of the slate.

The traditional slate 1 of Figure 1 has a single central aperture near its top edge through which a nail 2 is driven into a batten 3. Without other slates, as in Figure 1, the slate 1 will rest on further battens 4 and 5 down the roof slope, but in practice it will overlap further rows of slates nailed to those battens. This is illustrated in Figure 2 and it will be seen that with a wind of any force, as indicated by the forked arrow, the nail 2 will not have much power to prevent the slates from lifting. Once the slate has lifted, it can slew at an angle and not fall back into place.

The slate 6 of Figure 3 is secured by the preferred method known as centre holing. Near the centre of each edge that extends up and down the roof slope there is a hole to receive a nail 7 which is driven into a batten 8, the top and bottom edges of the slate overlapping further battens 9 and 10 respectively. This cures the lifting problem of Figure 2, but there is still difficulty in placing and fixing such slates, as mentioned above, and it must always be ensured that any row of slates only partially overlap the upper batten 9, in order to allow room for centre nailing the next row of slates.

A slate 11 according to the invention is shown in Figure 4. It is made to a conventional size and is provided with holes 12 near the centre of each longitudinal edge for the centre holing technique of Figure 3. However, in addition to these holes there is a slot 13 centrally positioned a short distance from the intended upper edge of the slate, and extending parallel to that edge. This leaves a narrow bridging band 14 which connects to the main body of the slate 11 through lines of weakness 15. Although shown extending at right angles to the upper edge of the slate, it may be found better to have these lines inclining outwardly from the ends of the slot to the upper edge. Along the band 14 and aligned with the upper edge, there is a flange 16, this providing a hook by which the slate can be located on a batten prior to nailing.

Towards the lower corners there are two pairs of circular knockout zones 17, created by lines of weakness in the material during manufacture. The purpose of these will be described later.

Preferably, the slate will be made of a thermosetting plastics material which can be almost of any colour but will normally be a simulation of

natural slate. It may b integrally made, with the holes 12, the slot 13, the flange 16 and the lines of weakness formed during the moulding process. However, it may be more convenient to cut the basic rectangle from sheet material, drill and cut the holes, the slot and the lines of weakness, and adhere the flange 16 to the band 14. That flange need not then be of the same material. Representative dimensions are indicated in Figure 4 for a 12" × 18" slate, but different sizes are contemplated.

The slates are laid in conventional overlapping fashion as indicated in Figure 5. However, the flanges 16 will hook onto the battens and automatically locate the slates while they are nailed. The spacing of the battens and the spacing of the slot 13 from the holes 12 in the direction of slope are such that the holes 12 will register with the centre of the batten below the one on which the slate is hooked and also with slots 13 of slates already positioned in the row below. Thus, the slate can be made secure by centre nailing without interference from slates below.

Should the slate have to be replaced, the nails by which it is held half way up its slope can be cut by a conventional ripping tool, but this still leaves the slate attached by its flange-hook 16 and by two nails for slates in the row above through its slot 13. However, by pulling firmly on the lower edge in the direction down the slope the lines of weakness 15 will fracture leaving the band 14 and flange 16 on the batten and freeing the upper portion of the slate.

A replacement slate will first have its band 14 and flange 16 snapped off. It can then be pushed up into place until it abuts the nails for the slates in the row above in the upper batten.

Various ways of securing a replacement slate in this position are possible.

Figure 6 illustrates a clip 18 which is used in conjunction with the knockout zones 17. These are removed from the replacement slate and also from the bottom adjacent corners of the flanking slates. The clip 18 is of plastics material and is in the form of an open rectangle and with studs 19 at each corner. These press down into the circular holes left by the knockouts, and thus hold the replacement slate to the adjacent ones.

An alternative is shown in Figure 7, and this does not require the knockout zones. A channel member 20 of resilient plastics material provides the clip, the channel being narrow and, in its relaxed state, convergent towards its mouth. When the replacement slate is in position, this channel member is fitted over the lower edges of that slate and the adjacent ones, its resilient grip on the latter providing sufficient support for the new slate.

A more complex clip 21 is shown in Figure 8. This is of 'T' configuration, the cross arm of the 'T' being similar to the channel member 20 and the stem of the 'T' corresponding to a back-to-back arrangement of the channel member 20. When a replacement slate is in position, this type of clip is slid into place, the stem penetrating between the sloping edges of the old and new slates and embracing them, until the transverse arms close over the lower horizontal edges. Generally, two such clips will be used, one on each side of the replacement slate.

The clips of Figures 7 and 8 may be made to a single standard size appropriate to the largest slates in the range. They can be used for small slates, and if necessary the stem of the clip of Figure 8 can be cut shorter, as indeed can the horizontal portions.

The presence of the flange 16 does create a slight problem in stacking and transport, since the slates cannot be packaged into neat rectangular blocks. To remove this problem, the slates may be extended longitudinally at their upper ends, either over their whole width or by two lugs 22, for example. These are shown in Figure 9. Each lug is apertured to receive a peg 23, which together provide the hook formation when pressed in. This can be done by the tiler as he places the slates. The projection of the slate slightly above the upper batten does not matter since the slot 13 leaves that exposed where necessary for nailing. The lugs may be on the bridging band defining the slot, as shown, or they may be more widely spaced and attached through lines of weakness so that they can be snapped off.

Fixing of the final tiles of the ridge and provision of a ridge covering can present problems which are met by the modifications shown in Figures 10 and 11. Firstly, it is most unlikely that the spacing between the last two battens at the ridge will be the same as that between all the other adjacent pairs of battens, this in turn means that the centre holes in the slates 6 are unlikely to be aligned with a batten. Figure 10 shows slates 6 which have a number of punch-out holes 24 located at regular intervals and in vertical lines with the original centre holes 12. The roofer can calculate the position of the underlying batten and punch-out a pair of holes at suitable points 24 to enable the slate to be fixed to the underlying batten. If necessary, the length of the slate can be adjusted by cutting off an end portion of the slate.

Normal ridge tiles are usually cemented in place over the ridge. However, cementing is not a suitable fixing method for use with plastics slates and the form of ridge covering shown in Figure 11 is therefore proposed. This comprises a lower section 25 which will be fixed by screws 26 to the ridge board 27 and the final ridge battens 28 on each side. A covering cap 29, of a shape corresponding to the conventional ridge tile, is then fitted to the lower section 25 by being slid or snapped into position. The ridge sections 25 and 29 would be supplied in suitable lengths which could be joined together by use of a clip similar in cross-section to the final covering cap 29.

CLAIMS

1. A roof slate comprising a flat she t having at its proposed upper dge a means wher by it can be located and held to a roof batten. It will have a facility whereby the nailing of an above course of slates will not damag its 'face' but yet assist in its

fixing. A series of holes along each side edge will allow it to be secured by nailing and also give provision for adjustment. 'Punch-out' and 'snap-off' areas will allow for ease of replacement.

2. A roof slate as claimed in Claim 1, having a lip set at right angles to the proposed upper edge to allow for location to the roof batten.

3. A roof slate as claimed in Claim 1 or Claim 2, wherein a slot is provided through the face of the slate parallel to its upper edge to allow 'through nailing' of the above course.

4. A roof slate as claimed in Claim 2 or Claim 3, wherein a series of holes are provided along each side to allow for fixing and adjustment.

5. A roof slate as claimed in Claim 3 or Claim 4, wherein a weak area is provided in the face of the slate in that portion which is between the slot and the lip allowing for ease of removal during replacement.

6. A roof slate as claimed in Claim 4 or Claim 5, wherein weak areas are provided each side of the lower edge to facilitate the refixing of a replacement slate.

7. A roof slate substantially as described herein, with reference to Figures 1-2 of the accompanying drawings.

Printed in the UK for HMSO, D8818935, 3/85, 7102.
Published by The Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.